

What is claimed is:

1. A field-effect transistor comprising:

a gate electrode formed at one side of a  
base substrate;

5 a source electrode formed at the one side of  
the base substrate;

a drain electrode formed at the one side of  
the base substrate;

10 an insulation layer formed between the gate  
electrode and the source electrode and between the  
gate electrode and the drain electrode;

a semiconductor layer formed around the  
source electrode and the drain electrode; and

15 a functional layer provided so as to come  
into contact with the semiconductor layer and  
containing electron acceptors.

2. The field-effect transistor according to  
claim 1, wherein the electron acceptor has a half-  
wave reduction potential of -0.46 V or higher.

20 3. The field-effect transistor according to  
claim 1, wherein the electron acceptor is a  $\pi$ -  
conjugate molecule composed of an ethylene  
molecule or a  $\pi$ -conjugate structure whose carbon  
number is 3 to 15 to which at least one group of -  
25 CN, -NO<sub>2</sub>, -F, -Cl, -Br, -I, and =O is linked.

4. The field-effect transistor according to

claim 3, wherein the  $\pi$ -conjugate structure has a carbon number of 3 to 15 and in which a heterocycle including an S atom as a heteroatom is formed.

5. The field-effect transistor according to claim 1, wherein the thickness of the functional layer is 0.5 to 500 nm.

6. The field-effect transistor according to claim 1, wherein the functional layer satisfies  
10 the following expression (1);

$$d_2 \times 0.001 \leq d_1 \leq d_2 \times 1 \dots (1)$$

where  $d_1$  denotes the thickness of the functional layer and  $d_2$  denotes the thickness of the insulation layer.

15. The field-effect transistor according to claim 1, wherein the concentration of the electron acceptors contained in the functional layer is 0.01 to 10 mass%.